Remarks

In the Office Action of May 25, 2005, the Patent Office rejected claims 1, 2, 6-9, 14, 15 and 17-21. Claims 1-11 and 13-21 are presented herein, the reexamination and reconsideration of which are respectfully requested in view of the following remarks.

Claim 1 has been amended herein to delete a minor typographical error. Applicants submit that the scope of the claim has not been altered.

The Patent Office rejects claims 1, 2, 6-9, 14, 15 and 17-21 under 35 U.S.C. § 103 (a) as being unpatentable over Hirai et al (U.S. Patent No. 6,155,386) in view of Summa (U.S. Patent No. 3,917,042). Claims 3-5, 10, 11, 13 and 16 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over Hirai et al in view of Summa and in further view of Prasse et al (U.S. Patent No. 6,112,873). Applicants respectfully disagree with the rejection for the following reasons.

As an initial matter, Applicants respectfully submit that Hirai et al and Summa fail to suggest the combination asserted by the Patent Office. The teachings of Summa, a high-speed clutch, are distinct from the teachings of Hirai et al, a braking system, in their respective structures and manners of operation. Specifically, the Summa reference relates to a clutch configuration of angled teeth designed to mesh and engage from high speeds. (e.g., Summa, col. 1, lines 1-8 and Abstract lines 1-5), whereas the Hirai reference teaches a braking system having a planar friction plate with no engageable teeth at all. Applicants respectfully submit that Summa does not appear to teach "dynamic braking" but instead teaches structure that facilitates quick locking engagement and disengagement of disc teeth.

Even assuming *arguendo* that it would have been obvious to combine Hirai et al and Summa, which it would not have been, such a combination fails to teach every element required by the claims of the present application. For example, claim 1 requires:

> **a spring, the disc face and the plate face being biased against each other by the spring to cause in a braking force from sliding contact between the disc plateaus and the plate plateaus and to cause a locking force caused a locking force when said plateaus mate with the recesses.**

Claim 7 requires:

> **a spring, the disc face and the plate face being biased against each other by the spring.**

Also, independent claim 15 recites:

> providing a brake plate with a plate face and **a spring force to selectively engage the plate face of the brake plate with the disc face of the brake disc, the plate face having shallow plate plateaus protruding from it, the spring force being chosen to permit the disc plateaus to slide over the plate plateaus in a dynamic braking portion of the method and prevent sliding of the disc plateaus over the plate plateaus in a locking portion of the method.**

Also, dependent claims 17-20 address features associated with the claimed spring. The Patent Office has cited no teaching of such a feature in either Hirai et al or Summa. Applicants note that Summa discloses a resilient member (28) (see FIG. 2 of Summa). Summa states:

> The magnetic clutch 2 includes **means for effecting separation of the clutch faces** 3 and 4 upon deactivation of the electro-magnetic component 17 and the magnetic field. In the illustrated structure, a certain number of the apertures 22 have one end thereof at least partially closed to provide an abutment for one end of a plurality of spaced resilient members 28 each having an end or shoe portion 29 mounted on the other end thereof and positioned to be in sliding engagement with the annular wear member 18 on the clutch face 3 of the first clutch member 5.

Summa, col. 3, line 67 through col. 4 line 6. In other words, Summa appears to teach resilient members (28) arranged to drive apertures 22 from one plate into contact with a wear pad on the opposite plate to force the plates **apart** quickly when the electromagnetic force is deactivated. Thus, the teaching of Summa appears to be distinct from the structure and operation of the claimed spring in the present application. Accordingly, the Patent Office has failed to establish a *prima facie* case of obviousness with respect to independent claims 1, 7, and 15, as well as dependent claims 17-20, and the rejection of these claims should be withdrawn.

The Office Action states, "In reference to claims 2, 6, 14 Summa is silent to the angle of the ramps." Applicants disagree and respectfully note that the Patent Office appears to be incorrect in its reading of Summa, as explicitly teaches steep ramp angles. As a result, the Summa reference teaches away from the ramp angles claimed in dependent claims 2, 6, 14, as well as claims 4, 5, 7, 11 and 21. Specifically, Summa teaches that the ramps should be at

acute angles of 20°-30° *with respect to the rotational axis*, i.e., **60°-70°** relative to the plane of the plate. (Summa, col. 4, line 61 through col. 5, line 4). Therefore, one of ordinary skill would not have been motivated to design the structure of the claimed invention having ramp angles between 5° and 20° relative to the face, which results in a desired gentle slope and shallow recess. Accordingly, withdrawal of the rejection of claims 2, 4-7, 11, 14 and 21 is respectfully requested.

The Patent Office also contends that the claimed angles would have been a mere design choice based on the materials used and the force desired to be absorbed by the ramps. (Office Action of May 25, p. 3). The Patent Office notes that "it would have been obvious to make the ramp angles 10 degrees since it has been held that where the general conditions of a claim are disclosed in the art, discovering the optimum or workable ranges involves only routine skill in the art." (*Id.*, citing *In re Aller*, 105 USPQ 233). Applicants respectfully traverse this ground of rejection for the following reasons.

Deficiencies of references cannot be saved by appeals to "common sense" and "basic knowledge" without any evidentiary support. *In re Zurko*, 258 F.3d 1379 (Fed. Cir. 2001). In the present case, Applicant respectfully notes that the Patent Office has again shown no evidentiary support for its argument that the angle of the disc ramp was merely a design choice, and furthermore, the evidence would appear to suggest an opposite conclusion, for reasons explained below. Additionally, Applicants submit that the Patent Office's rejection is negated by Summa's expressed teaching away from the presently claimed structure, and as a result, Summa would have motivated one of ordinary skill in the art *not* to modify known structure to yield the present invention.

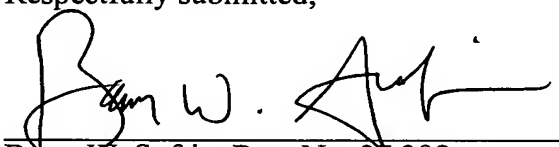
For example, as discussed above, the Summa reference explicitly teaches much steeper ramp angles (60°-70° relative to the plane of the plate) than claimed in the present application (e.g., 5° to 20°). Summa further expressly teaches that the *end surfaces* (9) of the teeth should have an angle of 5°-15° relative to the plane of the plate (Summa, col. 5, lines 12-17). In comparison, certain claims of the present application are directed to *ramp angles* of 10° or within a range between 5° and 20°, and in the preferred embodiment of the present invention, plateaus are planar relative to each other and perpendicular to the axis of rotation, i.e. 0°. Thus, Summa teaches that the end surfaces of the teeth (i.e. teeth plateaus)

should have an angle within the range of the claimed *ramp* angles of the present application, yet the ramps and end surfaces are intended to serve very different functions. This divergent view of the perceived conditions and optimal workable ranges (or desired function of various structure) between Summa and the claimed invention clearly demonstrates that the claimed angles would not have been the result of a mere routine modification. As noted above, Summa does not appear to teach "dynamic braking," but instead teaches structure that facilitates quick locking engagement and disengagement of disc teeth. In claim 1, for example, the structure is intended "to cause in a braking force from sliding contact between the disc plateaus and the plate plateaus". The motivation of Summa appears to not be braking at all, but rather to fully mate the teeth as soon as possible. Accordingly, applicants submit that the Patent Office has failed to establish proper "evidentiary support" or "general conditions" to sustain its rejection of the claims requiring specific ramp angles, and withdrawal of the rejection under 35 U.S.C. § 103 (a) is respectfully requested.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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